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(54) **Measurement of contact lenses.**

(57) One or more optical parameters of a contact lens can be measured with the lens contained in aqueous fluid sealed in a sachet of optically acceptable plastics film.

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MEASUREMENT OF CONTACT LENSES

This invention relates to the measurement of contact lenses.

There are several important parameters of a contact lens in which a practitioner is particularly interested, including back vertex power (BVP), back central optic radius (BCOR), and lens diameter (LD). The need for measurement of these parameters arises at the manufacturing stage, and also after periods of use. Ideally with soft lenses, the parameters have to be measured using a wet cell system so that the lens remains fully hydrated, and to this end there are several modifications available for keratometers.

A keratometer is ordinarily constructed for use in measuring the curves of the cornea, but by inclusion of a 45° reflecting prism or mirror system, and an optically ground base or plastics wet cell with a flat parallel base, it becomes possible to take measurements of a contact lenses submerged in saline in the wet cell.

This modification is widely adopted, and is described for example at page 459, Chapter 30, "The Verification of the Optical Dimensions of the Soft Lens", by

J Chaston in the book "Soft Contact Lens: "Clinical and Applied Technology", published by Cassells in 1978; also in the February 26, 1983, issue of "The Ophthalmic Optician" at page 128; and also at page 100, volume 3, no 3 (July 1980) of the British Contact Lens Association Journal. In general, measurements of contact lenses can thus be made on keratometers or other forms of ophthalmometer.

Care is needed to obtain useful results, and much thought has gone in to the design of suitable wet cells.

Some designs are relatively complicated,as clearly implied in an article by J Chaston and I Fatt published in Issue 1, Volume 9 (1982) of "International Contact Lens Clinic" on page 12. The article states that the only requirement to fulfil the same function as a wet cell is to have a storage vial which has a reasonably flat base. However, in the ordinary course of events, the glass vials used to store and transport contact lenses do not have a sufficiently flat and optically perfect base for accurate measurements, and so the authors therefore employed a piece of polymethylmethacrylate sheet cemented to a tube of the same material.

In accordance with the present invention, there is provided a method for measurement of one or more optical parameters of a contact lens, wherein the lens under

measurement is contained in aqueous fluid sealed in a sachet of optically acceptable plastics film.

The present invention also provides a sachet of optically acceptable plastics film containing an aqueous fluid and a contact lens.

Sealing of the lens in a sachet not ony permits optical measurements to be made, but leads to other advantages. Thus, the lens can be transported and stored in the sachet, and the need to transfer from a glass vial to a wet cell is avoided. Sterility within the sachet can be obtained. Presentation of stock sets of lens can be improved, and it is readily possible to reseal the lens in the sachet following withdrawal for a trial use. Any tonicity and pH variations of the storage solution will be minimised and changing environmental conditions will have little affect, particularly as the sachet can withstand a wide range of temperatures.

In order further to protect the lens and also to help maintain the orientation of the lens within the sachet, the lens can be retained in a support or holder. Such a support can be made of plastics material and secure the lens to facilitate the taking of the optical measurements.

The preferred material for the sachet is a polyester film such as that available from du Pont under the trade mark Mylar Type M-30. However, investigation will show that other materials can be used, such as pvc laminates, cellophane, polyolefines, and polyesters. The aqueous fluid will usually be sterile saline, and the sachet is best sealed by heat sealing.

It is ordinarily essential for the preferred material that it can be sterilized and withstand the pressures and temperatures for heating in an autoclave (British Pharmacopoeia 1978). The preferred material has a low water vapour property below 20 gms per square metre in 24 hours (A S T M E96 38°C - 90% RH). The preferred material is also capable of achieving a durable and hermetic seal using a suitable process for example, heat sealing. The material thickness is suitably within a range on 5 micron to 100 micron. Furthermore the material used for the sachet is preferably capable of accepting print matter using a suitable process.

In one example in accordance with this invention, a soft lens was heat sealed together with about 1 ml of saline in a rectangular sachet of about 10 cm by 5 cm. Optical measurements were then taken a Zeiss (trade mark) Keratometer modified in the usual way to include a prism and a stage for a wet cell.

In this instance, the sachet was placed on the stage instead of the wet cell, and a flat object lodged on top to flatten out the sachet and to wedge it in position. The lens could readily be manoeuvred into position before taking optical readings, and there was no tendency to adhere, as occurs with normal storage vials. Using the available optical formula, there was no difficulty in determining the back vertex power, BVP, from measurements of the back and front optic radius taken on the keratometer. Furthermore, the sachet provided an ideal way of packaging the lens for delivery by conventional methods.

Claims

1. A method for measurement of one or more optical parameters of a contact lens, wherein the lens under measurement is contained in aqueous fluid sealed in a sachet of optically acceptable plastics film.

2. A method according to claim 1, wherein the sachet is of a polyester film

3. A method according to claim 1 or 2, wherein the aqueous fluid is sterile saline.

4. A method according to claim 1, 2 or 3, wherein the sachet is sealed by heat sealing.

5. A method according to any preceding claim, wherein the lens is supported or positioned with the aid of a support within the sachet.

6. A sachet of plastics film containing an aqueous fluid and a contact lens.